Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(OLD) • EXAMINATION – WINTER 2016

Subject Code: 172305 **Date: 18/11/2016**

Subject Name: Plastics Testing & Instrumental Analysis (Department Elective - I)

Time: 10:30 AM to 01:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain in details the Basic concepts of testing-specifications and Standards for perform the testing of plastics.	**07**
	(b)	Define tensile strength? What are the factors influence the tensile strength of plastic material? Provide brief steps for performing tensile test.	**07**
Q.2	**(a)**	What is flexural strength? What are the factors influence the flexural strength of plastic material? Provide brief steps for performing flexural test.	**07**
	(b)	Define Proportional Limit, Secant Modulus & Yield Point. Show and explain the stress-strain behavior of various types of plastic material.	**07**
		OR	
	(b)	Write in brief the simple material identification tests used in different polymers.	**07**
Q.3	**(a)**	What is Impact Strength? List out the various types. Explain Charpy Impact Test.	**07**
	(b)	Define VSP. Explain how this test is carried out for plastics material along With its significance?	**07**
		OR	
Q.3	**(a)**	Define MFI. Explain how this test is carried out for plastics material along With its significance?	**07**
	(b)	Define HDT and explain the test procedure and its significance of the test.	**07**
Q.4	**(a)**	Explain in details about Differential Scanning Calorimetry (DSC).	**07**
	(b)	Explain the Term Hardness. List the Hardness Tests used for Plastics. Explain Rockwell Hardness Test.	**07**
		OR	
Q.4	**(a)**	Define Thermal Conductivity? How do you determine it for plastics by Guarded hot plate method?	**07**
	(b)	Define and explain the term Arc Resistance. Explain procedure to determine Arc Resistance of Plastics with neat sketch.	**07**
Q.5	**(a)**	Write down the principle and working procedure of Scanning Electron Microscope (SEM).	**07**
	(b)	Write detailed notes on characterization of polymer by using Transmission Electron Microscope (TEM).	**07**
		OR	
Q.5	**(a)**	Write down the principle and working procedure of Fourier Transform Infrared Spectroscopy (FT-IR).	**07**
	(b)	Explain, Flammability test for non rigid plastic & Oxygen index test.	**07**

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